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REMARKS

The present invention relates to gas engine oils of enhanced life as evidenced by a reduction in viscosity increase, oxidation, nitration, TAN increase, and TBN depletion comprising a base oil of lubricating viscosity in a particular combination of antioxidants and viscosity index improver additives.

Claim 1 was amended to clearly indicate that the additives are free of aminic anti oxidants, not just the viscosity index improver (see page 9, last sentence) and that the amount of VI improver is insufficient to render the oil multigrade (see page 14, line 12). The word "about" was also deleted.

Rejection Under 35 USC §112

In the Office Action, the Examiner rejected claims 1, 4-6 and 9-14 under 35 USC §112 first paragraph, as containing subject matter which was not described in the specification. Specifically, the Examiner noted that the specification did not provide support for an ash content of "about 0.1 to about 0.6 wt %". The Examiner then noted that the table at page 2 supported 0.1-0.6 wt %. The Applicants agree and have modified claim 1 and claim 6 to remove the word about before 0.1 and 0.6. As the Examiner noted, support for this amendment is found in the table on page 2.

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Rejection Under 35 U.S.C. §103

Blahey

In Paper 11, the Examiner rejected claims 1, 4-6 and 9-14 under 35 USC §103a as being unpatentable over Blahey (USP 5,726,133). The Examiner found the present invention obvious in light of Blahey for two reasons. First, the Examiner stated, "Blahey differs from the claims in that he does not specifically teach that the base stock does not contain an oil having a viscosity of 20 cSt or higher. However, it is well settled that the omission of a component and its function from a combination is an obvious expedient if the remaining components perform the same function as before."

The Applicants respectfully suggest that the Examiner has misinterpreted Blahey's teachings concerning viscosity index improvers. Blahey teaches, "viscosity index improvers (VII's) may be any polymer which imparts multifunctional viscosity properties to the finished oil,)" column 4, lines 58-60 (emphasis added). However, the present invention is a single grade not multigrade oil. Application at page 14, lines 5-13. One of ordinary skill in the art understands that in order to make a multigrade oil, as is suggested by Blahey, the final formulated oil must contain at least 6% viscosity index improvers. However, the present invention only uses viscosity index improvers up to 3%. Application at page 10, lines 18-20.

For numerous reasons, one of ordinary skill in the art would not consider employing expensive viscosity index improvers as thickeners for a single grade oil. Indeed, even Blahey's examples show that he prepares his single grade oils by mixing

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the 1200N with the 600N base oils. Thus, there is nothing in Blahey to suggest the use of viscosity index improvers or use in a single grade oil.

Therefore the Examiner's statement, "However, it is well settled that the omission of a component and its functions from a combination is an obvious expedient if the remaining components perform the same function as before", does not apply in this case. Specifically, Blahey does not teach the use of viscosity index improvers in a single grade oil. Therefore, if one were to remove the 1200N base oil, as is required by the present invention, the remaining components in Blahey's single grade oils would not be sufficient to meet the 13.5cSt kinematic viscosity at 100°C. That is, the remaining components do not achieve the same results as the present inventions use of the viscosity index improver in a single grade oil.

In the Examiner's second reason that the present invention is obvious in light of Blahey, the Examiner notes that it would be *prima facie* obvious to increase the kinematic viscosity of the inventive oil to 13.2 cSt at 100°C because Blahey teaches to raise the viscosity to 13.5 cSt. While the Examiner may be correct that it would be obvious to increase the kinematic viscosity of a single grade oil to 13.2 cSt @ 100°C, what is not obvious is the method to do so. Blahey teaches, as was well known in the art, to use an inexpensive, more viscous (1200 N) base oil to achieve the viscosity specification.

The present invention teaches something completely different and contrary to the prior art. The present invention teaches to increase the viscosity of a single grade oil using more expensive viscosity index improvers at a treat rate far below their normal

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rate (which would be used to impart multi viscosity functionality). The inventors then unexpectedly found that in using the VI improver, there was a synergistic and unexpected improvement in less viscosity increase over time, oxidation reduction, nitration reduction, less TAN increase and less TBN depletion. None of these effects would have been expected from using the VI improver at any treat rate let alone the low treat rates of the present invention. Applicants respectfully request that the Examiner remove her 103 rejections in light of these discussions.

Inoue

The Examiner also rejected claims 1, 4-6, 9, 10, 12, and 14 as being obvious over Inoue (USP 5,744,430). Later in Paper 11, the Examiner also reasserted her 103 rejection from the previous office action concerning Inoue. The Applicants will deal with both of these 103 rejections together. The crux of the Examiner's argument can be reduced to one statement, "The Examiner maintains that while the ranges of the components and resulting viscosity do not overlap, they are close enough that one skilled in the art would expect them to have the same properties." (citing Titanium Metal Corps v. Banner, 227 U.S.P. Q773 (Fed. Cir. 1985)). Applicants must respectfully disagree as not only are the ranges critical for differing types of oil, but also the properties discussed in Inoue are not the same properties as discussed in the present invention.

The Examiner equates Inoue's claim of an oil with a long lifetime (column 1, lines 50-54) with the present inventions mention of a gas engine oil of enhanced life

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(page 1, line 1). However, further reading of each specification confirm that these are clearly not the same properties. Inoue clearly and only is interested in friction modification. Indeed he repeatedly states that his only interest is reduction of friction over a lifetime of an oil (see column 5, lines 65-67 and column 7, lines 63-67). Thus, for Inoue the property of interest for long life is the friction factor in a degraded oil. However, long life in the present invention is defined as other properties, specifically a reduction in viscosity increase, reduction in oxidation, reduction in nitration, a reduction in TAN increase and a reduction in TBN depletion (page 1, lines 1-4). Thus, the properties of the oils of the prior art and the current invention are different and therefore unexpected.

Further, not only are the properties not the "same" as required by Titanium, Inoue also emphasizes the criticality of his defined ranges. Inoue specifically states, "However, when one or more of the additives are lacking or their amounts and a total amount of aromatics do not fall within the scope of the present invention, an excellent engine oil with good fuel consumption maintained for a long period of time cannot be obtained." Column 17, lines 30-34. Inoue also emphasizes the criticality of the MoDTC when he states molybdenum dithiocarbamate friction modifiers which are one of the essential components of the engine oil composition according to the present invention. Column 5, line 66 to column 6, line 3. Inoue further emphasizes the criticality of his ranges when he states, "When the amount of the component [MoDTC] is less than the lower limits set forth above, sufficient reduction and friction cannot be

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achieved; when the amount of the component [MoDTC] is more than the upper limits set forth above, oil and soluble sludge is produced)" column 6, lines 63-67.

The Examiner has not established the *prima facie* case for obviousness because even if one were to accept the Examiner's contention that these ranges are close (which Inoue specifically denies), one would never consider the properties similar. Further even if the *prima facie* case of obviousness has been established, it may be rebutted by showing the criticality of the ranges in the prior art. This criticality has been established by the above quotes from Inoue. Therefore even if the *prima facie* case was established, it has been rebutted.

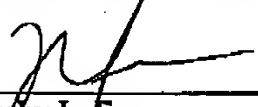
Finally, the *prima facie* case may also be rebutted if the prior art teaches away from current invention. Inoue teaches the criticality of the MoDTC his invention. However, in removing the MoDTC one of ordinary skill in the art would expect the oxidation and nitration properties to become worse. However, the current invention shows without the MoDTC but with the combination of phenolic antioxidant and a low treat rate of viscosity index improvers, the oxidation and nitration properties become better. Thus, Inoue teaches away from the current invention.

Rejection under 35 USC § 102(e)

In Paper 11, the Examiner reiterated her rejection of claims 1, 4-6 and 9-14 in light of Blahey (USP 5,726,133), stating that the Applicants arguments were unpersuasive. Applicants respectfully request the Examiner to reconsider this rejection in light of the arguments made herein.

Specifically, Blahey does not teach the limitation of using IV improvers in a single grade oil. As noted above, Blahey only teaches using VI improvers in a multifunctional viscosity oil; the present invention is for a single grade oil. As such, Blahey does not teach each and every limitation of the present invention. Applicants respectfully request that the Examiner withdraw her 102(e) rejection.

Respectfully submitted,


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☒ Pursuant to 37 CFR 1.34(a)

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